

## **Search Objective**

A search was undertaken to obtain the “crystal melting” of Bionelle 3000, 6000, 7000.

## **Search Methods**

The chemical names of the polymers were expanded in Registry and Beilstein, along with the alternative versions of “Bionolle”. Additionally, a Google search was conducted. The supplier’s web site (Showa High Polymers) was searched for material property. Using the PTO’s EIC 1700 non-patent literature page, the following resources were searched: Knovel, PolymerNetBase, and Matweb. EAST was searched for patent documents containing thermodynamic properties of the subject polymers. In all cases, the terms Bionelle and Bionolle were searched without regard to any additional numbers or terms, and the result sets were manually examined for references of interest.

## **Search Results**

No thermodynamic property information appears to be available for Bionelle 7000 from any of the resources that were searched.

CAS Registry records appear for each of the polymers of interest, but they are manual registrations that have no property data affixed to the records. Beilstein has records for the Bionolle 1000 series only.

The supplier’s web site contained information that stated that the crystallization temps for Bionolle 3001 and 3020 were 50 and 53 degrees C (see attached pdf).

No other relevant data not retrieved from other sources was available from the Google search.

The Knovel search retrieved a paper by Ma and McCarthy from the University of Massachusetts that gives a melting point of 91 degrees C for Bionolle 3000 (see attached pdf).

A Matweb search retrieved no information.

The PolymerNetBase search retrieved Polymers: A Property Database 2<sup>nd</sup> Edition which contains a crystallization temperature of 50-54 degrees C for Bionolle 3000 (see page 98 of the attached pdf).

A search of EAST contain a variety of glass transition points and melting points for Bionelle 3000 and 6000:

US 2007/0092712  
US 2006/0240726  
US 2005/0154114  
US 2005/0137356  
US 2005/0137332  
US 2004/0248486  
US 2003/0166779  
US 2003/0166748  
US 7,368,511  
US 7,368,503  
US 7,344,784  
US 7,297,394  
US 7,241,832  
US 7,214,414  
US 7,172,814  
US 7,160,977  
US 6,573,340

No other related data that was deemed to be of potential utility to the aim of this investigation was retrieved from this search.